

Reviews and Bibliographical Notices.

I. — DISEASES OF THE SPINAL CORD.

MALADIES DU SYSTEME NERVEUX. MALADIES DE LA MOELLE.
Lecons Professees a la Faculte de Medicine. Par A. Vulpian. Recueilles et Publiees par Le Dr. Bourceret. Paris, 1879. Pages 512. (*Diseases of the Spinal Cord, etc.*).

The sixteen lectures of which this volume consists, constitute one of the annual courses delivered by Professor Vulpian from his chair of *Experimental Pathology*, in the Faculty of Medicine, in Paris. It is but a short time since we gave a lengthy notice of a work in two volumes, by the author of these lectures (*Lecons sur l'appareil vaso-moteur*). It was with no ordinary expectations that this last volume was taken up, and it is pleasant to be able to record the fact, that our expectations have not been disappointed. This latest of his works fully sustains its author's already brilliant reputation.

No other part of the central nervous system is so well understood as is the spinal cord. And no person now living, it is probable, has a more full and easy command of our present knowledge, whether relating to its healthy or morbid states, than has Professor Vulpian. But few scientific men know, as well as he does, the conditions of real proof, or any better understand the nature and modes of critical application of the criteria of a fact, in experimental physiology. Perhaps, also, none excel him, in capacity and experience, in the application of physiological data to the elucidation of pathological problems, within the difficult domain of the nervous system. In this, as in his preceding works, our author has brought face to face the results of experiment and of clinical observation with great candor and critical insight, and with highly satisfactory results. It is to a brief survey of these latter, as well as the methods for attaining them, that we would invite the attention of the reader.

In a former course, Professor Vulpian had discussed the degeneration and regeneration of nerves, the consecutive alteration of muscles, etc., secondary alterations of the spinal cord in consequence of the lesion of nerve trunks, reflex paralyses and reflex atrophies, reflex epilepsies, traumatic lesions of the cord, cicatrization of the cord with a restoration of functions, etc.

In the course contained in the present volume, we have first, compression of the cord considered, whether sudden or slow,

whether produced by traumatisms or tumors of various sources and kinds, and of the differences of one kind as compared with others. Then next in order, primary lesions of the cord and its membranes, such as spinal meningitis, in its varieties; hemorrhages intra, or extra-meningeal; "necrobiotic softenings" of the cord, diffuse acute myelitis, in its different forms; interstitial myelitis, suppurative and hyperplastic; of systematic myelitis, acute and chronic, comprehending: locomotor ataxia, symmetrical sclerosis of the lateral columns, infantile muscular atrophy, progressive spinal paralysis, chronic myelitis *en îlots ou en plaques*, sclerosis *en plaques*, transverse sclerosis, etc., also tumors of the cord proper, and medullary hemorrhages are considered. Next in order a study is made of those spinal lesions which result from encephalic disease by descending degenerative disease, etc. To such important subjects is the course of lectures now under consideration consecrated.

But without farther preliminary, we pass to a notice of special topics. Then first of all "Compressions of the Spinal Cord." These are divided into *sudden* and *slow* compressions. The former are treated first in order, and are of course chiefly traumatic, or more widely speaking, accidental. There is as a rule disturbance of function in those parts of the cord which lie behind the point of compression. One of the most notable things is, the more or less complete temporary loss of reflex excitability behind the point at which the compression is exerted. In such cases reflex excitability is usually regained after a variable period, and, as might be expected, often rises above the normal degree of intensity.

At this point M. Vulpian makes a digression, to enable him to repeat and confirm the observation of M. Fubini, which was to the effect, that in sudden compression of the spinal cord,—say in the dorsal region,—he had seen the posterior lymph-hearts become very much slowed in their action, and he found it impossible to quicken their action by excitations of the sciatics or of the cord below or behind the compressed point. M. Fubini was led to conclude, that the spinal centre for the innervation of the lymphatic hearts in question has its seat high up in the cord, perhaps in the medulla. While M. Vulpian is able to confirm the facts he is unprepared either to accept or reject the conclusion of M. Fubini. The symptoms vary of course with the seat and degree of the compression.

M. Vulpian next passes to *slow* compressions of the cord. He repeats, from the writings of Charcot, the various kinds of disorder or disease which may produce it. The list is instructive, and is as follows:

1. By affections of the vertebræ. Under this head, first in rank is Pott's disease, and its various accidents, tuberculous caries of the vertebræ, spondylitis (inter-vertebral), cancer of the vertebræ, exostoses, vertebral gummata, and other neoplasms of the vertebral column.

2. By extra-vertebral tumors, such as aneurisms, cancers, hydatid cysts, prevertebral abscess, (retropharyngeal abscess,) opening either into the vertebral canal, or by finding its way slowly through the openings in the vertebral column.
3. By lesions of the vertebral ligaments, as in abscess, tumors, cysts, etc., developed in the tissues, immediately investing the dura.
4. By affections of the dura, causing exudations; tumors, such as sarcoma, myxoma, osteoma, cancer, psammona, and abscess, hydatids, etc.
5. By disease of the pia mater, causing exudations, and various morbid productions arising from this membrane.
6. By tumors of the cord itself; gummata, tubercles, cancer, sarcoma, glioma, etc.
7. By disease of the central canal of the cord, of which encysted hydrorachis, and slow intra-medullary hemorrhages are samples.

M. Vulpian has chosen the slow compression of Pott's disease as the type of its kind. How is the compression produced in this disease? The until recently classical notion, that it is due merely to deformity of the vertebral column, is rejected for the view arrived at by Echeverria, and by Michaud. It may be due to abscess at the seat of bony disease, or to caseous exudations at the same point, or as MM. Echeverria and Michaud suppose, to exudations from the dura at the point where the vertebral disease is, when though a paralysis is present, yet there is no deformity, such as kyphosis. The compression then is produced by the exudation in the site of a true *pachymeningitis extra*. The meningitis is the consequence of an extension of disease, from the diseased bone outside, to the dura inside, and from this arises the exudation, which in its turn causes the compression. It is a sort of papilloma, or a caseiform growth, according to M. Michaud, who has made such cases an independent and fruitful study. Such is the more common cause of compression in Pott's disease.

In the motor paralysis which occurs in such cases, one of the peculiarities consists in the rather complete preservation of sensibility, especially that of touch. In paralysis from Pott's disease, the aesthesodic tract of the cord is respected in a singular way. In seeking to explain this state of things, it would be natural to assume that it depends on the fact that the disease of the vertebræ is in their bodies and the joints between them, and hence the swellings and growths which extend from the seat of disease so as to press on the cord, would naturally first reach its front aspect, or in other words the motor tract. But it is not equally true for the posterior columns, which are not pressed on, and hence the absence of sensory paralysis. This reasonable explanation is rejected by M. Vulpian. His idea seems to be, that if a tumor advances against the cord from the bodies of the vertebræ, and hence presses against its anterior columns, that the

pressure will carry the cord back against the posterior wall of the spinal canal, so as to compress it at last, the same behind as in front, and hence the loss of function in the posterior part of the cord should be the same as that in the anterior columns, which, however, is not the case. But it seems to us M. Vulpian has neglected to consider certain conditions of the case, which should not be overlooked.

In the first place it should be remembered, that motor paraplegias of the kind now being considered, are seldom complete. Then it is our opinion that M. Vulpian has over-estimated the degree of the backward displacement and of the compression of the cord, in the slow compression paraplegias of Pott's disease. The displacement backwards is less, and compression needful to produce this paraparesis far lighter than may be supposed. But the chief fact which seems to have been overlooked, is the resistance by the *ligamentum denticulatum* on either side to displacement of the cord. It would really require considerable compression of the cord, from before backwards, to so far overcome its anchorage by the *ligamentum denticulatum* as to permit of its compression behind on the firm membranous and bony posterior wall of the spinal canal, and hence in the same way produce a sensory paralysis of the same degree as the motor. A degree of pressure on the front of the cord quite sufficient to produce a motor paraplegia might be easily produced, and yet leave the posterior columns free in their functions, because free from solid pressure. Then again, the fact that tactile sensibility is most frequently preserved, can be readily understood if the above views are accepted, and if Schiff's opinion is correct, that the channels for tactile impressions in the cord are in the posterior columns. At any rate we feel that M. Vulpian's explanation of the phenomena is lame and inadequate, and his rejection of the simple explanation we have referred to was made without due consideration. We have elaborated this subject at some length, because it is important and is easily misconstrued.

M. Vulpian raises the question as to the sensibility of the dura mater spinalis, and clearly adopts the opinion, on experimental and clinical grounds, that it is sensitive, and under certain circumstances of disease, exquisitely so. We call the attention of the reader to this subject, not because it is novel, but rather because of its practical importance in spinal disease, especially in the presence of spinal pain. In our opinion, the dura is much more often affected than seems to be suspected by the majority of physicians.

M. Vulpian considers the preservation of reflex excitability of the cord, below the compressed point, for long periods, to be an important diagnostic point, though consistent with other forms of localized disease of the cord proper.

In the fourth lecture M. Vulpian considers certain circulatory and nutritive affections resulting from Pott's disease. Passing by the vaso-motor disorder in parts innervated from or below

the seat of disease of the cord, we come to note certain other phenomena, and among them the trophic disorders sometimes witnessed in such cases. Besides the sudden appearance of bed sores, there are various neuroses of the skin observed, such as zona. But among the few instructive instances on record, those of Baerensprung, (*Charite Annalen*, X., XI., XII.) and Sattler (*Stricker's Med. Jahrbuecher*) not to mention others, are omitted.

In noticing the arthritic affections which arise in some cases from the spinal disease, the credit of first recognizing the relation of the joint affections to the spinal, is given to Dr. S. Weir Mitchell, when as we understand the matter, it should be given to his father—Dr. J. K. Mitchell.

In discussing *cervical paraplegias*, M. Vulpian shows that it can be produced experimentally, by slight mechanical compression of the anterior face of the cervical cord.

But how it is produced clinically is a more serious question. He passes in review the various hypotheses devised to explain the occurrence of this curious form of paraplegia, so far as known to him, and rejects them, to adopt, substantially, the view that the reason why the arms, and not the legs, are paralyzed by the lesion of the cervical cord, in such cases, is because the paralysis is due to compression of the grey rather than the white matter of the cord. No special stress is laid on this explanation by its author. But this view does not agree with the results of the numerous experiments and clinical observations on this subject, of Rosenthal (*Stricker's Jahrbuecher*, 1876, 381—400, *JOURNAL N. & M. DISEASE*, 1877, p. 82. etc.), whose observations are not mentioned by Prof. Vulpian. In speaking of some ascending and descending degenerative diseases of the cord, and the possibility of experimentally producing them, the interesting fact is developed, that certain secondary spinal lesions which can be produced in the dog, cannot be produced by the same means in the pigeon and the guinea pig. Such facts have singular significance, in view of the discordant results arrived at by various experimenters, who have operated on different animals by means of the same agents. In this connexion we notice what must be a misprint, that is the statement that the degenerative atrophies of the lateral columns of the cord, are *ascending*, when the contrary is true. Prof. Vulpian does not consider "fulgurant" pains, and "contractures" of the muscles of the members, an evidence of descending degenerative disease of the lateral columns, so much, but rather as dependent on localized myelitis.

M. Vulpian calls attention to the paralysis produced by cancer of the vertebral column. He declares that often it makes itself known by no symptoms, save those which arise from the resulting compression of the cord. There is often no pain, or other local symptoms to denote the presence of the cancerous growth. But in others in which the cancerous affection is more extended, there is said to be exquisite pain, in so far that it is said

such cases are types of painful paraplegias. Tumors of the tissues investing the dura, and of the dura itself, such as sarcomas, myxomas, psammonas, tumors of the vertebrae, (exostoses, gummata,) tumors of the cord, gliomas, gummata, tubercles, sarcomas, cancer, etc., produce similar phenomena it is said, and when they produce compression of the cord, they give rise at the point compressed to interstitial myelitis.

Compression of the *posterior face* of the cord produced more often motor than sensory paraplegia.

In discussing the results of unilateral compression of the cord, and among the rest the alleged loss of sensibility in the side of the body opposite to that compressed, M. Vulpian refers to his paper in the *Dict. Encyclopédique des Sciences Med.*, on the spinal cord, for a partial refutation of the notion (Brown-Sequard,) that sensory conductors decussate soon after entering the cord. But though we have read this part of M. Vulpian's writings attentively, we cannot share at present, to any considerable extent, his opinions. It still seems to us, that the bulk of evidence supports the view which affirms that the conductors of sense impressions decussate soon after entering the cord, at least, in great measure. The great mass of motor fibres do cross over, in the medulla or near it, from one side to the other. But certain bundles do not cross over at this point. They pass down in the same side of the cord as that of the brain in which they originated; it seems probable, chiefly in the *direct pyramidal tract* of the anterior column (column of Tuerck) and to cross from one side to the other, in the anterior white commissure, to terminate in the anterior horn of grey matter of the opposite side. These fibres of the direct (motor) pyramidal tract cross over more freely, perhaps, in the lower three-fourths of the cord than in the upper fourth. By this means we may explain how it comes to pass, that in brachio-crural hemiplegia from unilateral lesion of the cervical cord, that the arm is more completely paralyzed than the leg. This subject is discussed at some length by Prof. Vulpian; and his view of the spinal mechanism through which the above-mentioned paralytic phenomena come to pass is substantially as we have given it.

The remainder of this quite lengthy lecture is devoted to a recital of cases, found chiefly in the service (Salpêtrière) of M. Vulpian. But though of much interest to the neurological student, they cannot be profitably referred to in this notice.

The next lecture comprises but eight pages, while the fourteenth lecture, devoted to locomotor ataxia, is *one hundred and seventy-seven pages* in length, and no inconsiderable portion is in small type! It would require *not less than four* consecutive hours for its delivery. It is difficult to believe that M. Vulpian ever gave a lecture of such length, or that any class of students would sit and hear, or if they did hear, could comprehend and remember it.

We mention this extraordinary disparity in length between certain of these lectures to give ourselves the opportunity to notice the common practice of publishing lectures in which the reader is left to suppose that they were wholly extemporaneous, and were reported phonographically, the busy author not finding time to do more than make a few hurried corrections of the notes of the reporter; and yet the lecture often bears all the marks of careful elaboration, or, as in the present case, possesses characteristics utterly at variance with, to say the least, an average experience in such matters.

If one must publish a lecture which was never delivered, or not as it was delivered, either let the proprieties of the case be observed, or a frank explanation be made of its anomalous features.

We would not wish to be understood as specially censuring the course of M. Vulpian in the matter under discussion, but we have felt we ought not to let the occasion pass for noticing some of the unpleasantly suggestive characteristics of too many of our published lectures, whether in periodicals or books.

But we cannot, in this notice, follow M. Vulpian's admirable and instructive book any farther. To adequately examine it, and extract passages of interest to such of our readers as may not meet with the work itself, would be to us a pleasant but a long task. We have intended from the first to examine with some care only the first few lectures, that we might show our readers something of the valuable data and of the suggestive and critical reflections on the same with which the work abounds. More than this we cannot do at present.

It is the avowed intention of the author to continue his studies until he has produced a complete work on the nervous system, in its clinical aspects, in which studies all the resources of anatomy, whether healthy or morbid, and of physiology, whether human or comparative, are to be brought to bear in the hand of a master on the clinical and pathological phenomena of nervous disease, which must continue for a long time in the future, as in the past, to challenge and perplex even critical and cautious observers such as is M. Vulpian. We are afraid the time is yet distant when works of this character will be much in demand by the profession of this country.

II.—ANATOMY OF THE NERVOUS CENTRES.

ANATOMIE DES CENTRES NERVEUX. Par le Professeur G. Huguenin. Traduit par le Dr. Th. Keller; annoté par le Dr. Matthias Duval.

The appearance of this translation is an evidence of the widespread interest which is being manifested by the French for the results obtained by German cerebral anatomists; and since the